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## PRELIMINARY ANALYSIS OF THE BISON BONES FROM THE HUDSON-MENG SITE, SIOUX COUNTY, NEBRASKA

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### INTRODUCTION

#### *History of Exploration*

The Hudson-Meng archaeological site (Nebraska No. 25 SX 115) is located in northwestern Sioux County, Nebraska. It occurs in a drainage from a still-active spring on the property of Mr. Albert Meng. Preliminary excavation was begun in the fall of 1968 by Dr. Larry D. Agenbrood of Chadron State College after the site was brought to his attention by Mr. Bill Hudson, a local amateur archaeologist. Large scale excavation was begun in the spring of 1971 by volunteer students and faculty from Chadron State College.

#### *Description of the Site*

When work was halted in the fall of 1971, an area of bone covering 15 by 35 meters had been excavated. The entire bone bed probably encompasses an area four or five times this size. Thus far an area of bone 4 meters by 12 meters has been collected for study. The bones occur in a single layer, suggesting the site was used only once. No butchering pattern is thus far discernable in the distribution of skeletal elements.

#### *Study Methods*

The bones were treated with a mixture of white glue and water before removal from the site. They were cleaned with dental tools and treated with Alvar in the laboratory. Olson (1960) was used as a reference for identification of skeletal elements. All identifiable bones were measured and separated as to right and left. The weight of certain elements were determined with a beam balance, while volume measurements were obtained with a large graduated cylinder. All measurements were taken with a vernier caliper accurate to 0.1 millimeter.

### ANALYSIS

#### *Number of Bones*

A total of 960 bones were recovered. Figure 1 shows the relative

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abundances of the key elements recovered and positively identified. Skull material consists of a single occipital fragment. This lack of cranial material suggests that either the site was a butchering area rather than a kill site, or skull material is located in a portion of the site which has not yet been excavated.

### *Sample Size*

Shotwell (1955) has devised a technique for estimating the minimum number of individuals which could have contributed to a given skeletal element sample. Using this technique, it appears that 24 animals are represented in the sample in question.

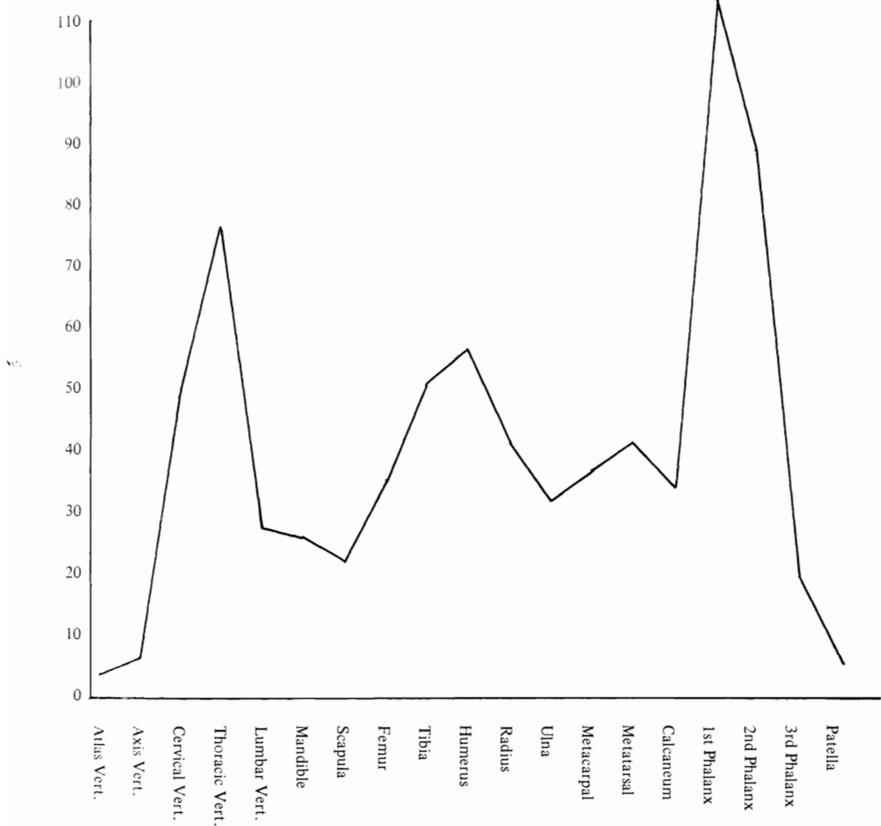


Figure 1. Graph of numbers of key skeletal elements recovered and positively identified.

*Sex Distribution*

The sex distribution of the sample was determined on the basis of metatarsal and metacarpal dimensions and calcaneum and astragalus volumes. Lorrain and Dibble (1968) used similar analyses. The larger volumes or measurements were taken to indicate bulls, with the dividing line arbitrarily chosen at a break in the point distribution. Based on these determinations, the sample consists of 12 bulls and 12 cows.

*Age Distribution*

Age of the animals in the sample was based on two criteria; dental analysis and degree of fusion of selected epiphyses. Analysis of cheek tooth wear as outlined in Fuller (1959) indicated that no young calves or aged individuals were present. The degree of fusion of the proximal end of the humerus, the proximal end of the tibia, the distal end of the femur, and the proximal end of the metacarpus gave similar results.

The absence of calves or aged animals suggests that the kill took place in the late winter, before the arrival of calves and after maximum winter attrition.

*Species Represented*

Horn core measurements are the usual criterion for specific assignment of *Bison*. An alternative method was used in the Hudson-Meng assemblage, as adequate skull material was lacking. Lorraine and Dibble (1968) among others have attempted specific assignment of *Bison* on the basis of astragalus volume. Preliminary findings indicate an astragalus volume of less than 100 cc. for *Bison bison*, while extinct species astraguli average greater than 100 cc. The astragalus volume for the Hudson-Meng sample ranges between 70 and 130 cc., with an average of 95, indicating that the species involved is *Bison bison*. However, Dr. C. B. Schultz of the University of Nebraska (personal communication) reports an occurrence of *B. antiquus* in sites near Scottsbluff, Nebraska which has astraguli averaging less than 100 cc. The question of the validity of astraguli measurements in determining species of *Bison* requires further study of larger samples.

*Age of the Site*

A Scottsbluff type spear point was found associated with the bones at the site. This dates the site as ca. 9,000 B.P. Carbon 14 dating of bone material, which should supply an absolute date, is in progress.

*Acknowledgements*

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